

## CHAPTER II.

### SURVEYS AND WORKING PLANS.

#### (A).—SURVEYS.

64. The institution of a special Forest Survey Branch for conducting topographical surveys of the forests of the Bombay Presidency is undoubtedly the historical event of the year, for it is a distinct and a remarkable advance in the march of progress. The Government of India, in their letter No. 1095, dated 5th November 1888, embodied in Government Resolution No. 7704, dated 19th November 1888, in the Revenue Department, approved and sanctioned the proposals of the Government of Bombay, regarding the general scheme for the conduct of forest surveys, which was discussed and agreed to at a conference of high officers of the Government of India and of the Bombay Government held at Poona on the 19th July 1888. These proposals provide :

- 1st.—One Survey Party of the Topographical Survey of India, fully equipped and manned, to be placed at the disposal of the Bombay Government for the purposes of Forest Surveys in this Presidency.
- 2nd.—The Survey Party to be utilised for Forest Survey purposes in such manner as the Bombay Government may direct.
- 3rd.—The cost of the party to be debited to "Forests": in other words half its cost to be borne by Imperial and half by Provincial Revenues.
- 4th.—The normal scale for the forest survey maps to be one of 4 inches to the mile, but on sufficient cause being shown by the Conservator of Forests, the Bombay Government may direct that the survey and maps of any special forest block or area be made on the 8 inches to the mile scale.
- 5th.—The map to be printed at the Poona Government Photozincographic Press, the charge being debited to "Forests."
- 6th.—Colonel Pullan, B. S. C., to be placed in charge of the Forest Survey Party as Superintendent of Forest Surveys, Bombay.
- 7th.—The officer at the head of the party to be granted the same travelling allowance as a Conservator of Forests and is to be under the control and supervision of the Survey and Settlement Commissioner, supervision over his work being also maintained by the Surveyor General of India.
- 8th.—The topographical survey of the non-forest portion of Kánara to be made by the Survey Party on the 2 inches to the 1 mile scale, and the Forest Survey to receive credit to the extent of Rs. 10,000 per annum on account of this work.
- 9th.—The annual cost of the Forest Surveys to be estimated at Rs. 71,000.

These arrangements came into effect from 1st October 1888.

65. The Forest Survey Parties were working during the year in the Districts of Násik, Thána, Poona and Sátára, and much useful work has been accomplished.

66. The following statement will show the progress reported to have been made during the year :—

District.	Triangulation.	Traverse.	Detail Survey.			Cost.	REMARKS.
			W. L. 8".	8".	4".		
						Rs.	
Násik ... ..	264·0	328·39	...	121·486	112·48	11,714	Nándgaon, Málegaon and part of Yeola Talúka.
Thána ... ..	180·0	64·47	17·991	...	...	4,908	Karjat, Bhiwandi and Kalyán Talukás.
Poona ... ..	40·0	180·0	...	...	128·52	8,739	Máwal Talúka.
Sátára ... ..	...	228·0	...	...	76·0	5,504	Wáitálúka.
Násik and Thána ...	...	...	...	...	...	11,409	Amount spent on preparation of fair sections of Nándgaon and Karjat Talukás.
Total ... ..	484·0	800·0	17·991	121·486	317·0	42,274	

67. It is impossible from the above figures to arrive at any correct average of the cost per square mile of the survey on either the 8" or the 4" scale, or to make a comparison with the cost incurred and the rates of previous years; but the Superintendent of Forest Surveys, Colonel Pullan, reports that the 8 inches survey has cost Rs. 187 per square mile and the 4 inches survey Rs. 65 per square mile, excluding mapping. These results show great improvement upon the rates of the two years preceding, for in 1886-87 the 8 inches survey cost Rs. 257 per square mile and in 1887-88 Rs. 272 per square mile. The work performed during 1888-89 would seem to be:

		Square miles.	
8" scale	...	139,477	cost Rs. 22,619.
4" "	...	317	" 20,605.

and the total cost of the Forest Surveys charged to the Northern Circle against the year amounts to Rs. 43,224.

68. That the present arrangement will provide excellent and highly useful maps upon the 8" scale is unquestionable, but that the survey operations, in so far as the Northern Circle is concerned, are as economical and serviceable to the forest administration as might be, is a moot point. With reference to the forest maps on the 4" scale, it should be remembered that the Conservator of Forests, Northern Circle, arranged with the Surveyor General, when the topographical survey of the districts comprising the Northern Circle was in progress, for the forest countries of the Thána and Panch Maháls Collectorates and of the leased Dángs to be surveyed and mapped upon the 4" scale, the Forest Department paying at the rate of Rs. 50 per square mile for this survey, being the difference in cost between the ordinary 2 inches and the special 4 inches surveys. The undermentioned areas were thus surveyed and mapped on the 4" scale:—

1. Násik Collectorate	...	...	42.6 Square miles.
2. Thána Collectorate	...	...	2698 "
3. The Leased Dángs	...	...	655.5 "
4. The Panch Maháls	...	...	874.6 "
Total			4,270.7 "

At Rs. 50 per square mile the total cost amounted to Rs. 2,13,500, which includes the supply of copies of each map without additional charge. Compared with the rates given by the Forest Survey Branch for forest maps on the same scale, Rs. 80 per square mile for Northern and Central India, a saving of Rs. 30 per square mile, or Rs. 1,28,100 in the total cost, would appear. The present arrangement is not so serviceable as might be, because the Forest Survey parties will not undertake the *parcellement* of the forests; they will not break up the forest blocks into compartments, surveying and marking out upon the ground the boundaries of these compartments, and consequently after the survey maps have been received, and in many cases before the maps are prepared, the Forest Officers have, by the agency of their own surveyors, to lay out and mark out the sub-divisions of forest blocks; and thus the same ground is gone over twice.

69. Experience of the map on the 4" scale having demonstrated to the satisfaction of the Conservator and of the Divisional Forest Officers that the maps on this scale were practically inefficient for the elaboration of working plans based on area where the compartments and the coupes are, in force of local circumstances, of small size, and the country is rough and difficult, a reference was made to Government representing the advisability of adopting the scale of 8 inches = 1 mile for all the teak reserves in the Northern Circle and for all the forests of the two Thána divisions: and Government in their Resolution No. 11, dated 3rd January 1889, sanctioned this proposition. It is improbable that in any other part of India the forests are worked upon a system of numerous small fellings distributed over a district. In the Thána Collectorate 230 coupes have been marked out for the season 1889-90, of which 130 are in North Thána and 100 in the South Thána Division. The average area of each of these 230 small fellings is 48 acres. A compartment of this size is, for all practical use, not discernible upon a map of the scale of 4 inches = 1 mile. In the bábul reserves of the Deccan Districts, which are located chiefly upon the

banks of rivers, the coupes average from 3 to 5 acres in area, because the erosive force of floods in the rivers would scour away the soil were extensive tracts to be cleared of trees upon these riparian estates which are subject to inundations; no map of *the least utility* of a 3 to 5 acres compartment could be produced, and it would be a simple waste of money to prepare elaborately surveyed forest maps, on the 4" scale of the teak forests and the bābul forests, which are necessarily worked in this careful manner, and which contribute largely towards an expanding revenue of nearly 12 lakhs of rupees. Thus it will be seen that forest maps, on the cheaper scale of 4 inches = 1 mile, however admirably they may serve for all practical purposes for which forest maps are required in Northern or Central India where conditions are totally different, would be inefficient for a great portion of the Northern Circle.

(B).—WORKING PLANS.

70. Mr. T. B. Fry, Deputy Conservator of Forests, 3rd Grade, was in charge of the Working Plans Division throughout the year, with the exception of three months during the recess season while on privilege leave; and during this period Mr. R. C. Wroughton, Divisional Forest Officer of Poona, held charge of the office in addition to his own duties.

71. No alteration was made in the scale of the office establishment during the year, but a field establishment was entertained at different periods of varying strength within the sanctioned limit of cost according to the work required to be done.

72. The operations of the Working Plans Division were carried on in accordance with the system detailed in paragraph 67 of last year's report. The whole of the forest area included under Reserved Forests, and in certain talukās under Protected Forests, in the two Divisions of the Thāna Collectorate, was thus treated; and the following statement will show the particulars of the differentiation which has been effected:—

No.	Name of Range.	Total Area.	Number of Blocks per Range.	Number of Compartments actually laid out in 1888-89.	Average Area of Compartment.	REMARKS.
	<i>North Thána Division.</i>	Acres.			Acres.	
1	Máhm ... ..	81,000	41	41	49	The number of compartments laid out is less than the number of blocks, because, 1st, all blocks are not yet worked; 2nd, blocking work was only completed late in the year; 3rd, compartment work was completed in many Ranges either before April 1888 or after the 31st March 1889; 4th, in certain cases compartments had not been felled.
2	Váda ... ..	80,320	25	28	80	
3	Umbargaon ... ..	35,889	15	9	62	
4	Dáhánu ... ..	70,884	28	22		
5	Sálsette ... ..	14,641	10	6	36	
6	Bassein ... ..	52,255	23	...	57	
	<i>South Thána Division.</i>					
7	Sháhapur and Khardi ...	157,812	53	20	74	
8	Murbád. ... ..	66,642	19	11	87	
9	Mokháda ... ..	47,540	16	...	74	
10	Bhiwndi ... ..	39,803	20	3	49	
11	Kalyán ... ..	32,497	17	13	47	
12	Karjat and Khálápur ...	51,954	20	3	65	
	Total ...	731,237	287	156	63	

73. The average area of the compartments of a range is arrived at by dividing the forest area of the range by the number of blocks multiplied by 40, i.e., the number of years in the revolution; and it must be noted that the real average area of a compartment, and more especially of a coupe, is frequently considerably less than the normal area, because in laying out compartments for

working and coupes for exploitation, exclusions are made, from the total areas of blocks, of the portions of the latter where great height and the rugged character of the hills render the forests practically unworkable, since forest growth upon steep slopes high up and upon scarps, &c., has to be preserved for climatic and mechanical purposes.

74. Satisfactory progress was made towards the erection of forest boundary-marks by the Working Plans Division in the Thána District during the year. With the exception of a few outlying forests of small area, the boundaries of all the reserved forests in Khálápur and Karjat Tálukás were properly defined upon the ground, by erecting 1,586 cairns at a cost of Rs. 970 in time to allow the Forest Survey Party to fix the position of each cairn. And 221 marks were erected in Bassein Range at a cost of Rs. 176. Ninety-five miles of outer forest boundary line were thus defined upon the ground by erecting in all 1,807 cairns at a cost of Rs. 1,146.

75. The average cost of laying out a single compartment, exclusive of the pay of the field establishment, was Rs. 4-12-8 against Rs. 5-13-0 in the preceding year, and the average cost per acre was Re. 0-1-8.

76. Mr. Fry, as usual, delivered lectures on Forestry at the College of Science, Poona, for the students of the Forest class during the rains, and on his departure on leave Mr. Wroughton carried on the duty and conducted the final examination also. Works, such as drawing and colouring in forest boundaries on maps of various scales, the revision of the work done during the season, preparation of block maps, &c., were in progress during the rainy season.

77. The expenditure under *A VIII c.* "Surveys and Working Plans" amounted during the year to Rs. 65,787-2-8, including the cost of Forest Surveys by the Topographical Survey Party of the Government of India, which amounts to Rs. 43,224.

## CHAPTER III.

### PROTECTION AND IMPROVEMENT.

#### 1.—ESTABLISHMENTS.

78. There was no change during the year in the superior Forest staff allotted to the Northern Circle for the administration of the forests in 12 divisions composing the Northern Circle, which consisted of one Conservator of Forests, and thirteen Deputy and Assistant Conservators of Forests, as in the year before.

79. Messrs. W. S. Hexton and F. R. Desái, Deputy Conservators of Forests, 1st Grade, have been transferred from Sind to the Northern Circle. The following officers belonging to the superior staff were absent on privilege leave for the period stated against their names :—

- (1) Mr. W. G. Betham, Deputy Conservator of Forests, 2nd Grade, from 5th April to 10th July 1888 ;
- (2) Mr. H. Mainwaring, Deputy Conservator of Forests, 3rd Grade, from 2nd May to 1st August 1888 ;
- (3) Mr. H. W. Keyes, Assistant Conservator of Forests, 1st Grade, from 9th July to 9th October 1888 ;
- (4) Mr. T. B. Fry, Deputy Conservator of Forests, 3rd Grade, from 6th August to 6th November 1888 ;
- (5) Mr. W. S. Hexton, Deputy Conservator of Forests, 1st Grade, from 5th September to 5th October 1888 ;

and Mr. F. Gleadow, Deputy Conservator of Forests, 4th Grade, proceeded on furlough for 18 months on the 15th April 1888.

80. The services of Mr. Hornidge, Assistant Conservator of Forests, 1st Grade, were placed at the disposal of the Government of India for employment in the Central Provinces under orders contained in Government Resolution No. 2022, dated 14th March 1889.